Woman C.P.A.

Volume 47 | Issue 4 Article 7

10-1985

Microcomputers And Small Business: The Dilemma of What To Buy

Roberto Marchesini

Sherre Strickland

Microcomputers And Small Business

The Dilemma of What To Buy

By Roberto Marchesini and Sherre Strickland

The age of computers is here. Every practitioner, entrepreneur, and family must have one. Every business must have one because the competition has one or is about to purchase one. The accounting practitioner needs one, not only because his competition has one, but also because his client has one. The company with the computer is innovative and "forward-looking." The company without a computer is not progressive and might not warrant the client/customer's continued patronage. Microcomputers (or personal computers) are responsible for the explosion of computers into every facet of the business world. Microcomputers are relatively inexpensive because of the ability to mass produce them and because the environment (air conditioning and power sources) in which they operate is not restrictive as with the larger computers.

The microcomputers are also "user-friendly" from the standpoint that the operator does not need a degree in computer science to be able to communicate with it. In fact, a few hours reading a manual is sufficient to allow a person to talk with the microcomputer. This environment is now leading to the elimination of the first question a consultant answers for a small business client — "Do I need a computer?" The answer is almost automatically "Yes" in the mind of the small business owner or practitioner. It is no longer a question of need, but it is a case of want. The second question then is "Which brand of computer should I buy?" This question poses an ever increasing dilemma. The number of manufacturers has multiplied multifold since the mid-70's. Then, when the number of manufacturers started to diminish, the number of available models increased drastically. For example, Apple computer has an Apple II, Apple IIc, Apple III, Apple IIe, Apple LISA, and Apple McIntosh!

In conjunction with the above, one must also consider the application programs available for the computer. There are countless numbers of programs available, but one must be careful as all programs do not work on all machines. In the quest for the "right" computer, one very quickly enters into what is termed "information overload." That is, it is impossible to disseminate (absorb) all of the available information on all brands of microcomputers and all of the programs that may be used with a given machine. Furthermore, many of those who are buying the microcomputers for their businesses have very limited knowledge about its operations. In other words, the majority of today's adults (excluding the upcoming generation who may very well be "computer jocks" before reaching high school) are computer illiterate or computer semi-illiterate.

The intent of this article is twofold. The first, is to address in specific terms what a small business or small accounting practitioner should look for when selecting among viable alternatives. A number of decisions have to be made even if the brand of computer has already been chosen, i.e., hardware specifications, software and personnel requirements. The second objective is to emphasize the safeguards that should surround the use of microcomputers so that the computerization of the accounting system does not deteriorate into an "error machine" or "fraudulent scheme."

The Need For A Computer

In general, one can envision two major areas of usage of the computer:

1. the efficient handling of large volumes of data, i.e., the data processing task, and
2. the transformation of data into information to assist management in decision-making.

For the majority of small firms, the first usage is paramount. Typical applications in this area are payroll, accounts receivable, inventory control, and customer billing. Computer-assisted decision-making applications are generally typified by modeling programs, statistical and mathematical applications, and simulation in the area of finance, management, and marketing.

Although the question "Do I really need a computer?" is not being asked by the management of small organizations as often as it should be, an analysis of the costs and benefits associated with the computerization of the small firm may prove to be imperative if one is to avoid severe problems in the future. Such analysis proves to be beneficial in two ways. In the first place, a cost/benefit analysis requires evaluation of the existing accounting system (or lack of it) within a firm. Secondly, it requires the firm to assess its data requirements for implementation of its informational goals.

This initial cost/benefit analysis should be considered the most important in the overall process of computerization.

The report which includes the cost/benefit analysis is the feasibility study. This report, as indicated, should begin with the identification of the existing manual (or computer) system used within the firm. It should provide a clear picture of how data are acquired, stored, and retrieved for the different segments of the organization. Of more importance, it should analyze if the information requirements of the management team are met and if the firm's required tasks for efficient, effective operations are performed. Let us consider the area of accounts receivable as an example. The sequence of events that should take place can be envisioned, in a simplified way, as follows:

- An order is placed by the firm's customer
- Goods are shipped (assumed credit is granted)
- Billing invoice is sent to the customer
- Payment is received

Various source documents are generated and received by this process: purchase order, packing slip, invoice, check, and deposit receipt. An analysis should be made on how these tasks and functions are performed. Specifically, one should analyze if the time between the order and the shipment of goods is acceptable and if an invoice was issued promptly.

On the other hand, management may be interested in additional information necessary for decision-making, i.e., are payments made within the "terms of trade," are customers paying all the invoices, what is the aging of receivables, and so on. Timely information is necessary to help management perform efficiently the two main functions of planning and control. Any business system, manual or computerized, should provide management with this required information. Failure to accomplish this goal has contributed heavily to the fact that approximately eighty percent of new businesses fail in the first few years of their life. If the analysis of the manual system reveals that it is efficient and does provide management with timely and complete information, the only question to be asked should be directed to the economic gains, if any, to be achieved by the use of computers. Unfortunately, such gains are difficult to quantify. A computer feasibility checklist taken from an article by Pipino and Necro reveals some difficult questions to answer, such as

- Would any cost savings be realized by performing the data-processing task more efficiently?
- What is the value of improving the accuracy and timeliness of reports and documents generated by the system?
- What is the value of the intangible benefits associated with computer use such as better customer service, improved employee morale, improved worker productivity, competitive advantage, and the like?[1]

When the analysis of the manual system reveals that there are gaps in the flow of information, a firm will start to look at computers as a problem-solving tool, while in fact moving to a computer environment could turn out to be a frustrating experience. There are three facets of computers that must be well understood before a decision to acquire a computer system is made. It is to be noted that the information on the costs of acquiring and maintaining a computer is readily available and understood by management and therefore they will be dispensed with here. The three areas of importance are:

- Application Software,
- Hardware,
- Personnel.

Software

Software must be the prime consideration when selecting a small computer system. Software is usually divided into a) operating system software, and b) applications software. Each computer brand has its own operating system (OS). For example, the operating system for the IBM PC is named DOS. The use of different operating systems for different brands of computers translates into lack of compatibility among machines. Another problem is that there are different versions of a given operating system. Again, with the IBM PC there is DOS 1.0, DOS 1.1 and DOS 2.0 versions. These versions obviously limit compatibility among machines of the same brand! The best a person can do when confronted with this situation is to try to reduce the potential problem. Elimination of incompatibility is not possible until manufacturers decide to set such standards. This "standardization" is evolving through the availability of operating systems that will run on different machines. CPM is a prime example of an OS that is becoming widely used on many computers mainly because a great deal of application software is being written that uses CPM. However, there is more than one version of CPM on the market!

Application software refers to the programs that perform specific jobs or tasks. Examples include general ledger packages, subsidiary ledgers such as accounts receivable and accounts payable, word processing, spread sheets, graphics, mailing lists, and statistical packages. Obviously, there is a wide selection of each type of package. For example, there are numerous word processing applications with variations in the tasks they will perform. Some of them include "spelling" capabilities where the computer searches for words in a manuscript that do not agree with the computer's word bank. Small businesses generally begin their computerization effort by implementing the

In the quest for the right computer, one quickly enters into what is termed "information overload."

Selection of the software often reduces considerably the number of computer systems to be considered.

general ledger function, payroll, accounts receivable, and accounts payable, and inventory. Customized software to run all of these applications is very costly. In fact, in many instances, it is very likely that the cost of customized programs will exceed by a factor of two or three the cost of the hardware. It is highly advisable, then, in order to reduce costs, to purchase off-the-shelf application packages. However, software houses that produce and market application packages cannot take into account all of the diverse needs of their potential customers. Two guidelines should be strictly adhered to:

1) Ascertain that the package is free of programming errors.
2) Make sure that the program satisfies the need of the business as to accounting, planning and control.

To implement these two guidelines, visits to businesses that are already using the application package is essential in determining the quality of the package. Existing users are more likely to give an objective view of the software than a salesperson does. Secondly, by preparing a sample of transactions and "running" them on the computer it is possible to determine if the software is capable of accommodating the firm's needs. It is not uncommon, or example, to find inventory packages or billing packages that cannot contain all of the information required by the firm. Both of these checks must be performed before the software is bought so as to avoid expensive mistakes. As with customized software, modification of off-the-shelf packages to accommodate even nominal changes can be extremely costly. One final word of caution on application software. Be sure there is a well-documented manual. One way to be sure it is a complete, useful manual is to ask during the visit to an existing user. Probably no other reason causes more frustration and subsequent nonuse of purchased software packages than this lack of adequate explanation of what the user may or may not do and then how to do it.

Hardware

The term "hardware" refers to the physical machine. The machine may be subdivided into two parts:

a) CPU, or the Central Processing Unit, which for our purpose contains the "memory" of the computer;
b) Peripherals, which include disk drives, printers, and CRT (TV screen).

All of the application packages will have a minimum requirement for computer memory. Software vendors will advise on the hardware requirements needed to run their packages. In fact, the selection of a particular application software often will restrict the choice of computer systems to a few types. This should be considered in a positive light, insofar as there are literally hundreds of systems to choose from. The particular software package chosen by the small firm and the firm's constraints with regard to number of employees in the payroll system, the number of inventory items and the number of vendors in the inventory package, the total number of accounts receivable and accounts payable, general ledger accounts and so on, will also determine the type and number of peripherals necessary to manage the input and output of the data.

The three essential peripherals are disk drives, printers, and CRT's. Disk drives come in four types. There are 3-inch disk drives, 5 1/4-inch disk drives, 8-inch drives, and hard disk drives. The first three types use floppy disks which resemble thin square magnetic records. The fourth type uses a larger, more durable disk. The 5 1/4-inch drive is perhaps the most common drive for microcomputers; however, the hard disk drives are becoming more and more common. The hard disk drives have two advantages over floppy disks. First, a hard disk can store more data (by a magnitude of 20 to 100 times more). Secondly, the hard disk is more durable and thus increases the reliability of the information stored on it.

In selecting a printer, the purposes of such must be carefully weighed. A letter-quality printer "types" a letter of the same quality as a typewriter. The daisy-wheel printer is a letter-quality printer. The dot-matrix printer prints a readable copy but not necessarily to the level that you would want for a client. The letter-quality printers are still rather expensive and significantly greater in cost than the dot matrix

printer. If letters, invoices, and/or reports will be generated by the computer to give to a client/customer, then a letter-quality printer may be a necessity. Take the time to look at some of those printers not claiming to be letter-quality printers. Some dot matrix printers allow variations in the number of dots printed per character which increases readability and appearance.

The CRT is basically a video screen. Two items to take note of are whether or not graphics will be used in the commercial aspect of the business and how many rows and columns of data can be read at a time on the screen. The amount of data that may be displayed at any given time will affect the efficiency of the operator. A graphics terminal will cost more since it is capable of displaying multiple colors.

In summary, the available choices of hardware are so extensive that they will often confuse the potential buyer. It should be stressed again that the selection of the software often reduces considerably the number of computer systems to be considered. At the extreme, the software package may dictate the choice of only one computer.

Personnel

The third and final area of importance is the human resource aspect of computerization. It is perhaps the most difficult to consider, especially in a small business because often it entails the need for acquisition of computer skills by existing employees who may never have been exposed to detailed computer operations. Contrary to popular opinion, the implementation of a computer system within an organization initially requires an increase of employees' time. This is due to the initial step which demands that both manual and computerized operations be run concurrently in order to validate the new system. Most of the existing employees tend to develop uncertainties and fears about the new system. Fears of the changes about to take place with their implications for job security and work routine disruptions may result in an unsuccessful implementation of the new system. It must be remembered that the personnel assigned to the new system, whether former employee or new employee, will ultimately determine the success of the computer effort. Moreover, management and supervisory personnel will also be required to use the various outputs of the system. Lack of interest and usage on their part will also tend to make the system inefficient and wasteful. The human aspect of computers is, then, a key variable that must be properly taken into account to insure a successful experience with computers.

Controls

The first objective was to address the potential problems and impact of selecting a microcomputer and applicable software. The second, and very crucial consideration is that of controls over the use of the microcomputer itself and controls over the programs and data.

Use of Computer

Unfortunately, fraud stories involving microcomputers are now replacing the fraud stories involving the larger computers. Just as employees must be supervised, so must the computer but in a different way.

There are three basic concerns in any organization regardless of its type (product or service). These are:

a) that all valid transactions are recorded;

b) that all recorded transactions are valid; and,

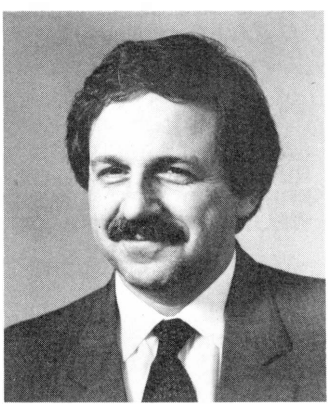
c) that there are properly placed and timed error-checking techniques.

Each of these concerns along with suggested control features will be discussed in turn.

Just as before the introduction of the microcomputer into the accounting system, there were procedures or prescribed sequence for handling invoices, cash sales, cash remittances, adjusting entries, etc. to be sure all were "captured" in the journals and ledgers. This is still the case; however, now typically one person enters all transactions into a computer file. The manual journals and ledgers are now printed periodically from the microcomputer through a command(s) of this one operator. It is important then that the person entering data into the computer does not prepare the input, i.e., journal entries, list of cash remittances. Those individuals assigned to preparing the input (journal entries, vouchers, etc.) should keep a control total for checking with the output. For example, when a group of vouchers

are submitted there should be a number assigned to the group. The beginning number and ending number of the vouchers (if they are prenumbered) could be listed and then a total dollar amount. This information is retained by the person submitting the vouchers. After the computer operator enters the data it must be listed for verification and returned to the person responsible for preparing the data originally. Such procedures as the one just described should be in place for all transactions to minimize the problem of unrecorded sales and/or expenses.

Although it sounds like the one above, that all recorded transactions are valid is not the same as that all valid transactions are recorded. In the first the concern is with unrecorded items. The second concern is with too many transactions being recorded. One well used fraudulent scheme is to record fictitious sales and accounts receivables. This is where the owner must play a vital role. It is the owner who has a "feel" for what sales have been for the month or year. It is the owner who is aware of inventory levels and purchases and salaries, etc. The owner must require frequent reports that he can easily scan for discrepancies.



Roberto Marchesini, Ph.D., *is associate professor of accounting and finance at the University of Houston-Clear Lake. His research and teaching interests are in accounting information systems. He has published articles in other professional journals.*

One fraud case involved the keeping of two sets of records on the microcomputer. One set for management and one set for the computer operator. It is not unusual for only one person to be intimately involved in the operation of the microcomputer. If at all possible, within the constraints of current employees, a second person should be familiar with the programs in use. This familiarity by a second person is needed for backup in case of illness or termination as much as for control purposes. At a minimum the owner should be able to load the data files on the computer for his or her inspection.

A third concern is that procedures are in place to avoid or flag errors and/or irregularities in the accounting system. One such procedure was mentioned previously where totals and/or document counts are used to verify the accuracy and completeness of data entered by the microcomputer operator. Other error-checking procedures could include —

a) bank reconciliations;

b) reviewing computer printouts of vouchers (listed in numerical order) for missing vouchers and unusual amounts and/or payees; and

c) scanning the general ledger for unusual transactions.

Programs and Data

The programs and data are assets of the company. Therefore, both must be guarded against loss, misuse and destruction. Four precautions should be taken:

a) All application programs should be copied before they are ever used for the first time. It is not unheard of for a program to be accidentally destroyed.

b) A back up of all data files should be a routine procedure. Daily back up should be considered for the most active files.

c) All disks should be locked in a fire proof vault. Back up disks should be stored off the premises.

d) No food or beverages should be allowed near the microcomputer and the diskettes.

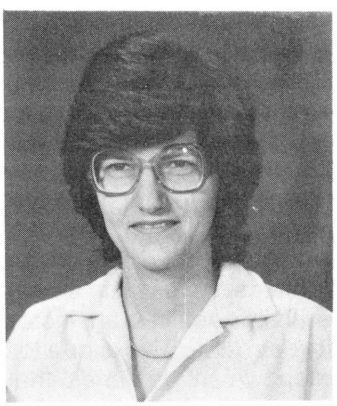
Conclusion

Before purchasing a microcomputer, consider the effectiveness and efficiency of the existing system. If the existing system needs modification, determine the costs and benefits of computerizing the accounting system. There are three important facets or potential problems to address when deciding to go to a microcomputer - hardware needs, software needs and personnel. The idea is to try to find an acceptable combination of hardware and software that will meet your needs at a reasonable price. Also, personnel must be properly informed and adequately trained to handle the changes that invariably come with the microcomputer.

Finally, the selection is just the first step. Management must be sure the microcomputer and software are properly used, properly safeguarded, and efficiently integrated into the business so it is used to its fullest capabilities. Ω

NOTES

[1]Leo P. Pipino and Charles R. Necro, "A Systematic Approach to The Small Organization's Computer Decisions," *Journal of Small Business Management,* July 1981, pp. 8-16.



Sherre Strickland, Ph.D., CPA, *is assistant professor of accounting at the University of Houston-Clear Lake. She is a member of the Texas Society of CPAs, AICPA, AAA and EDP Auditors Association. She has published in other professional journals.*